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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Perryman et al.

Serial No. 09/994,553

Filed November 27, 2001

GOLF CLUB SHAFT WITH
CONTROLLABLE FEEL AND BALANCE
USING COMBINATION OF
FIBER-REINFORCED PLASTICS AND
METAL-COATED FIBER-REINFORCED
PLASTICS

Attorney Docket No. 1248-38

Before the Examiner

Sneh Varma

Group Art Unit 3711

August 14, 2002

RECEIVED

AUG 23 2002

TECHNOLOGY CENTER R3700

DECLARATION OF HOWARD MILLER

Sir:

I, Howard Miller, hereby state as follows:

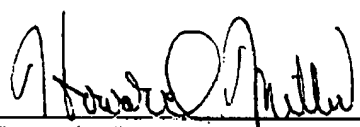
1. I am the President of Swing Science, LLC
2. Swing Science is the official exclusive licensee for golf club shafts marketed in North American under the Rapport trademark.
3. Swing Science markets certain Rapport golf club shafts under the DIAMET and NICK trademarks. These shafts are manufactured with a process using nickel coated fibers over a filament wound shaft core.
4. Copies of promotional literature for DIAMET and NICK shafts are enclosed herewith. Swing Science's promotional literature for Diamet and NICK shafts emphasizes the advantages of the nickel coated fibers used by Rapport in manufacturing these shafts.

5. The NICK shafts, introduced in 2002, have been a very successful product for Swing Science in the golf market, based primarily on the advantages of the nickel coated fiber construction and manufacturing process. For example, during the first half of 2002, Swing Science sold over 3,100 shafts for a total sales value greater than \$70,000.

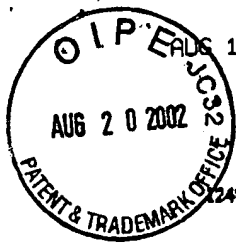
6. During 2002 to date, NICK shafts have represented approximately seven percent (7%) of Swing Science's total sales volume, representing a strong growth in sales despite generally flat to negative growth in the golf shaft market.

7. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

08/14/02
DATE


Howard Miller
President, Swing Science LLC

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AUG 13 '02 02:50PM R MALTBY'S GOLFWORKS

DECLARATION OF GOLFWORKS

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I, Ralph Maltby, hereby state as follows:

1. I work for Ralph Maltby's Golfworks.
2. Golfworks sells golf club shafts manufactured by Rapport Composites, Inc.
3. Golfworks sells certain golf club shafts purchased from Rapport Composites which are marked with the names C.E.R. and NICK. These shafts incorporate Rapport's nickel tip technology.
4. In Golfworks' 2002 full catalog, the C.E.R. and NICK shafts were featured, including emphasis on the fact that the shafts include "proprietary Nickel Tip Technology (NTT), these shafts use specially nickel coated fibers to control tips stiffness and shaft balance point." A copy of Golfworks' 2002 catalog page 63 is included herewith.
5. Golfworks began selling C.E.R. and NICK shafts in early 2002, and has sold over 4,600 of the shafts during the first six months of 2002, for a total sales value exceeding \$90,000.
6. These shaft were the most successful new shaft launch for Golfworks this year.
7. Golfworks has selected Rapport's nickel technology shafts for additional designs/models for the 2003 product line now in development.
8. The ability of the nickel design process used in manufacturing these shafts in order to customize the shaft design has been a key to the success of these shafts.
9. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that

AUG 13 '02 02:50PM R M BYS GOLFWORKS

P.3

these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

8-13-02

DATE

Brett LindseyName: BRITT LINDSEYTitle: VP, TECHNICAL SERVICES



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:)	Attorney Docket No. 1248-29
)	
Perryman et al.)	Before the Examiner
)	
Serial No. 09/337,356)	Sneh Varma
)	
Filed June 21, 1999)	Group Art Unit 3711
)	
GOLF CLUB SHAFT WITH)	June 12, 2001
CONTROLLABLE FEEL AND BALANCE)	
USING COMBINATION OF)	
FIBER-REINFORCED PLASTICS AND)	
METAL-COATED FIBER-REINFORCED)	
PLASTICS)	

AFFIDAVIT OF MICHAEL W. PERRYMAN

BOX RESPONSE – NO FEE
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Michael W. Perryman, hereby state as follows:

1. I am a founder, owner and the President of Rapport Composites USA, Inc., the assignee of the above patent application. I am an inventor of the invention claimed in the above patent application.

2. I possess over ten years of technical experience in the field of manufacturing, distribution and sales of composite golf club shafts.

3. Rapport Composites manufactures and sells a golf club shaft under the trademark DIAMET which embodies one commercial embodiment of the present invention.

4. Specifically, the DIAMET shaft is a composite golf club shaft formed from a body having multiple fiber reinforced graphite plies. The body has a core formed of one or more filament wound or sheet-rolled fiber reinforced graphite plies and at least one sheet-rolled fiber reinforced ply rolled around the core. The body further includes an outer layer formed around the sheet-rolled ply including at least one filament wound ply having metal-coated fibers.

5. In one model of the DIAMET shaft, at least one filament wound ply with metal-coated fibers is wound to uniformly add a predetermined amount of weight to the shaft. In another model of the DIAMET shaft, at least one metal-coated filament wound ply in the outer layer is uniformly wound over a portion of the shaft to concentrate a predetermined amount of weight in a predetermined location on the shaft.

6. Rapport's DIAMET shaft was the first marketed shaft design using metal coated carbon fiber. Rapport's TriMatte shaft, which embodies a commercial embodiment of the present invention with two metals, is the other currently marketed shaft using metal coated fibers.

7. The DIAMET shaft has solved a long felt need where no other shaft technology allows the total weight of the shaft to be varied almost completely independently of the other shaft characteristics. This allows us to make a much wider range of shafts to fit virtually any golfer. In addition to controlling the weight of the shaft, the percentage of nickel used can greatly effect the "feel" of the shaft making it highly desirable for a particular golfer.

8. The DIAMET shaft has received significant industry recognition and commercial success. Attached are examples of publications recognizing the DIAMET

shaft, its impact on the market and the newness of its construction. This includes golf equipment dealer publications showing test results as well as articles by authors from Golfweek, GOLF Magazine, and PGA Magazine.

9. Despite a very limited advertising budget, sales of the DIAMET shaft models have grown at a rate exceeding 20% per year and the line has expanded to include eight different models. This growth rate has been in contrast to a flat to negative growth rate for the overall golf shaft market.

10. The DIAMET shafts are the only tour proven metal coated fiber shafts. Spike McRoy won the 2000 Buy.com Tour Championship and season money titles playing DIAMET shafts in his Callaway X-12 irons and Callaway VFT driver. Spike McRoy also recently placed third in the 2001 Kemper Open using DIAMET shafts and led the tournament in greens in regulation.

11. Independent robotic tests have confirmed that DIAMET shafts provide distance control equal to steel, which was not the case with traditional graphite (carbon fiber) shafts. These specific test results can be provided for the examiner's review if necessary. The tests were conducted in April and August of 1999. In addition, recent tests show that a new 75g DIAMET driver design outperformed conventional graphite, steel, and the True Temper BiMatrix multi-material shaft.

12. I have studied the patents cited in the Second Office Action dated March 13, 2001, including McIntosh - U.S. Patent No. 5,601,892; Branen - U.S. Patent No. 4,135,035; Suzue - U.S. Patent No. 6,088,947; Pompa - U.S. Patent No. 4,836,545; and Hoffmeyer - U.S. Patent No. 5,735,753. Based on my knowledge and experience in the field of composite golf shafts, I conclude that, at the time the present application was

filed a person of ordinary skill in the art would not have been motivated to combine the teachings of these patents as suggested by the Examiner to arrive at the claimed invention.

13. For example, the Branen patent teaches away from the claimed invention with, "The goal generally, is to provide the stiffest, lightest shaft possible." In contradiction, the present invention suggests *adding* a predetermined amount of weight to a shaft. By controlling the winding and weight, the present invention allows the manufacturer to control the feel and balance as independent variables by adjusting stiffness and/or weight to tune a golf club shaft. A person of ordinary skill would see no teaching or suggestion to combine these references.

14. For another example, the Suzue patent is unrelated to filament winding. The Suzue patent deals with the unrelated concept of adding a decorative shrink-wrap metal layer formed outside the body of a core member. This does not teach or suggest filament winding or metal-coating of the filaments within the core member.

15. For a further example, the Pompa patent is also unrelated to filament winding. The Pompa patent teaches a manner of forming a joint between a purely metal section and a purely composite section. A person of ordinary skill in the art would not consider Pompa when manufacturing a shaft with filament winding or metal-coated filaments.

16. Finally, the Hoffmeyer patent does not teach or suggest the present invention to one of ordinary skill in the art. Hoffmeyer suggests concentrating weight at a protruding "bulge section." Hoffmeyer suggests that, "bulge section 4 can be formed by wrapping one or more trapezoidal and/or triangular pennant-shaped patterns around the mandrel in the desired location of bulge section 4." (Col. 3, lines 53-56). Hoffmeyer only

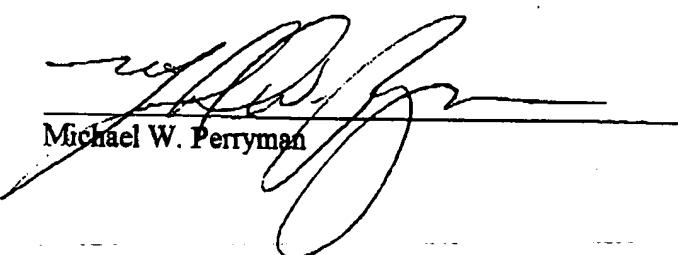
teaches sheet wrapping, Hoffmeyer does not teach or suggest a smooth area of concentrated weight nor filament winding with metal-coated filaments.

17. In summary, and speaking from my experience in this area, I would not have been motivated to combine the teachings of the McIntyre, Branen, Suzue, Pompa and Hoffmeyer patents in order to arrive at the claimed invention at the time of the application. Several of the cited five patents deal with separate and unrelated areas and one of ordinary skill in the art would not have considered combining them to arrive at the claimed invention.

18. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

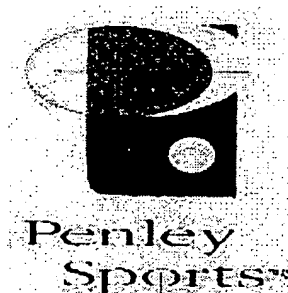
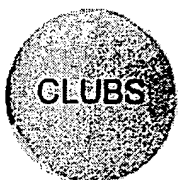
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6/12/01


Michael W. Perryman

Welcome to Hodson Golf

GRAPHITE SHAFTS AVAILABLE



Penley Sports - A highly successful graphite shaft on most tours which individually matches/manufactures shafts towards an individuals swing characteristics. The Silver Cloud and Ladies Secret line is an excellent choice for those golfers with slower swing speeds. Please refer to the link regarding their more extensive line for the average to above average golfer.

OMEGA SERIES (OS):	TYPE	RMS SYSTEM	FLEX	FLEX POINT	SHAFT WEIGHT	TORQUE	LENGTH	TIP	BUTT	SWING SPEED AVG. *
SILVER CLOUD	WOOD	2-23-3	A	LOW	74	6.1	45"	335	570	90-95
	IRON	2-23-3	A	LOW	76	5.1	40"	370	580	
LADIES SECRET	WOOD	2-12-3	F	LOW	73	5.5	45"	335	570	80-75
	IRON	2-12-3	F	LOW	75	5.3	40"	370	580	

Penley Steel Flight - This unique shaft offers the playability of steel with that "ease to hit" graphite comfort and feel-and of course, complete control over launch angle trajectory, dispersion, distance control and ball spin.

WOODS & IRONS										
STEEL FLIGHT (SFB):	TYPE	RMS SYSTEM	FLEX	FLEX POINT	SHAFT WEIGHT	TORQUE	LENGTH	TIP	BUTT	SWING SPEED AVG. *
PARAW	WOOD	5-4-5	XX	HIGH	90	2.6	45"	335	580	110
	WOOD	5-4-5	X	HIGH	90	2.6	45"	335	580	95-110
	WOOD	5-4-5	S	HIGH	90	2.6	45"	335	580	80-105
	WOOD	5-4-5	R	HIGH	90	2.6	45"	335	580	70-85
IRON	IRON	5-3-5	XX	HIGH	100	2.1	40"	370	610	
	IRON	5-3-5	X	HIGH	100	2.1	40"	370	610	
	IRON	5-3-5	S	HIGH	100	2.1	40"	370	610	
	IRON	5-3-5	F	HIGH	100	2.1	40"	370	610	

- Rapport Diamet** - A graphite shaft (Diamond-Woven Metallic Fibers) which not only looks impressive but, more importantly, offers more impressive results. "The DIAMET technology bridges the gap between steel and Graphite, offering the weight, balance, and most importantly the feel - of steel, while providing the shock absorption and dynamic playability of graphite. Finally, a graphite shaft for irons that meets the demands of low handicappers and touring professionals". Rapports new Diamet shaft is earning high marks against the industrys most popular steel shafts. The Diamet series features several models geared towards specific clubs. Depending upon which club you order (irons, wedges, fairway woods, Driver) the specific Diamet shaft will be used based upon your desired flex. You will soon be hearing a lot about this shaft series.



- Rapport Tour Ni 271** - Featuring Rapports DiaMet technology, the woods are designed for better players looking for more weight and feel in a fairway wood. The irons are designed for better players looking for a mid-flex point iron shaft with all the performance benefits of steel.

Model: Rapport Tour Ni 271



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .005"	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 2 CPM	Weight ± 2 Grams
Wood	S	Mid	4.0	.600	.335	4.0	255	92
Wood	R	Mid	4.0	.600	.335	4.0	245	92
Wood	A	Mid	4.0	.600	.335	4.0	235	92
Wood	L	Mid	4.0	.600	.335	4.0	225	92
Iron	S	Mid	3.0	.600	.370	3.0	300	88
Iron	R	Mid	3.0	.600	.370	3.0	290	88
Iron	A	Mid	3.0	.600	.370	3.0	280	88
Iron	L	Mid	3.0	.600	.370	3.0	270	88

*Note: The Tour Ni 256 series is available with taper tip shafts (.355) for irons.

- **Rapport Tour Ni 165** - Featuring Rapport's Diamet technology, this model is specifically designed for wedges. The low balance point and heavier overall weight makes this a perfect choice for use in scoring clubs.

Model: Rapport Tour Ni 165



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .005"	Tip Diameter ± .005"	Parallel Butt/Tip ± .10"	Dynamic Flex ± 2 CPM	Weight ± 2 Grams
Iron	S	High	2.0	.600	.355T	10.5 Butt	395	110
Iron	S	High	2.0	.600	.370	2.5 Tip	365	110

- **Rapport Tour Ni 495** - Featuring Rapports DiaMet Technology, the Rapport Tour Ni 495 is engineered specifically as a driver shaft which creates a more penetrating ball flight.

Model: Rapport Tour Ni 495



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .005"	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 4 CPM	Weight ± 2 Grams
Wood	X	High	3.0	.600	.335	6	270	80
Wood	S	High	3.0	.600	.335	6	260	80
Wood	R	High	3.0	.600	.335	6	250	80

- ⊕ **Rapport Cirrus** - Super thin walled construction with proprietary full length reinforcement offers unbelievable feel and performance with great durability. Specifically designed for use in titanium drivers and today's exotic low profile fairway woods. The recent Darrell Survey officially recognized Rapport as being the #1 fairway wood shaft at the seasons second major with its proprietary ultralight design based on the Cirrus line.



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .010"	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 3 CPM	Weight ± 2 Grams
Wood	100	Mid	4.0	.580	.335	5.5	240	58
Wood	90	Mid	4.5	.580	.335	5.5	230	56
Wood	80	Low	4.5	.580	.335	5.5	220	54
Wood	70	Low	4.5	.580	.335	5.5	210	52

- ⊕ **Rapport Oracle Plus** - A first of its kind combination flex hybrid golf shaft. Combining a sheet wrapped core with filament wound layers, the Oracle Plus offers both consistency and feel.



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .010"	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 2 CPM	Weight ± 2 Grams
Wood	R/S	Mid	4.5	.600	.335	.5	230	84
Wood	L/A	Low	4.5	.600	.335	.5	210	84
Iron	R/S	Mid	3.5	.600	.370	.5	290	78
Iron	L/A	Low	3.5	.600	.370	.5	270	78

- ⊕ **Rapport Synsor Lite** - A true ultralite under 70 grams. Offers the exceptional playability of the top selling Synsor model with almost a 20% reduction in weight. Available in a broad range of flexes, the Synsor Lite is suitable for players of all skill levels.



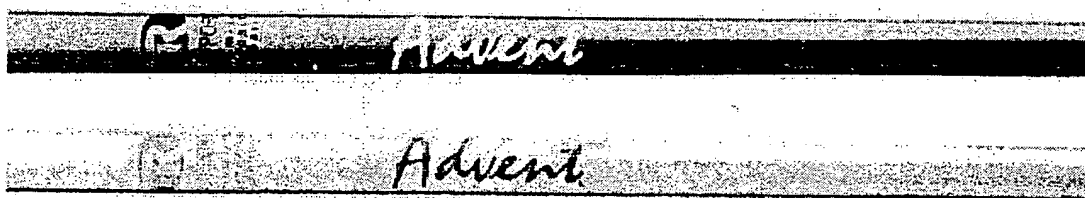
Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .010"	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 4 CPM	Weight ± 2 Grams
Wood	S	Mid	5.5	.600	.335	5.5	255	67
Wood	R	Low	5.5	.600	.335	5.5	245	65
Wood	A	Low	5.5	.600	.335	5.5	235	64
Wood	L	Low	5.5	.580	.335	5.5	215	63
Iron	S	Mid	4.5	.600	.370	5.5	315	67
Iron	R	Low	4.5	.600	.370	5.5	305	64
Iron	A	Low	4.5	.600	.370	5.5	295	63
Iron	L	Low	4.5	.580	.370	5.5	285	62

- ⊕ **Rapport Synsor** - Rapports most popular shaft which benefits players of all levels. 100% high tensile strength graphite provides superior durability making the Synsor a great value for golfers of all skill levels.



Type	Flex	Flex Point	Torque ± .5 Degrees	Butt Diameter ± .010	Tip Diameter ± .005"	Parallel Tip ± .10"	Dynamic Flex ± 4 CPM	Weight ± 3 Grams
Wood	R/S	Low	5.0	.605	.335	5.5	245	79
Wood	L/A	Low	5.0	.595	.335	5.5	225	75
Iron	R/S	Low	4.0	.605	.370	5.5	290	74
Iron	L/A	Low	4.0	.595	.370	5.5	270	72

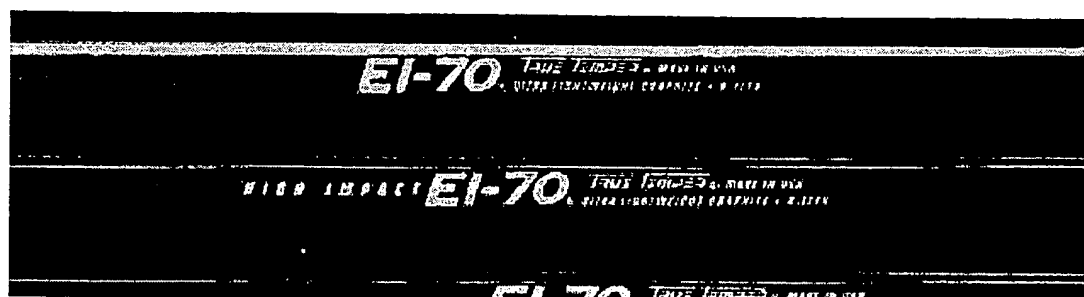
- ⊕ **Rapport Advent Series** - High tensile strength graphite composite game improvement design for slower swinging players. Higher torque and a lower flex-point makes the Advent perfect for Seniors, Ladies, and developing golfers.



Model: Rapport Tour Ni 495



- ⊕ **True Temper EI-70** - A favorite among tour professionals and low handicap golfers due to its high-strain carbon graphite with computer-enhanced design, ultra-light weight, and low torque. This shaft also features a high bend point (low ball trajectory) for maximum control. The High Impact has similar specs but a beefed-up tip adapted especially for oversized heads or short-hozel metal wood heads (Callaway style).



EI-70 A KINETIC (VERTICAL) GRAPHITE - 1200 G / 110"

DESCRIPTION	STOCK No.	FLEX	TORQUE	RSSR (MPH)*	TIP	BUTT	LENGTH	P.T.S.*	WT. (G)
EI-70 Woods	UE758W	R	3.7"	85-95	335"	580"	46"	5.0"	79
	UE758W	S	3.5"	90-105	335"	580"	46"	5.0"	81
EI-70 High Impact Woods	UH758W	R	3.5"	90-100	335"	580"	46"	4.5"	81
	UH758W	S	3.4"	100-110	335"	580"	46"	4.5"	83
EI-70 Tour Woods	UE760W	Tour S	3.5"	100-110	335"	600"	46"	5.0"	88
	UE760W	Tour X	3.5"	110-tip	335"	600"	46"	5.0"	89

Welcome to Hodson Golf

HOME

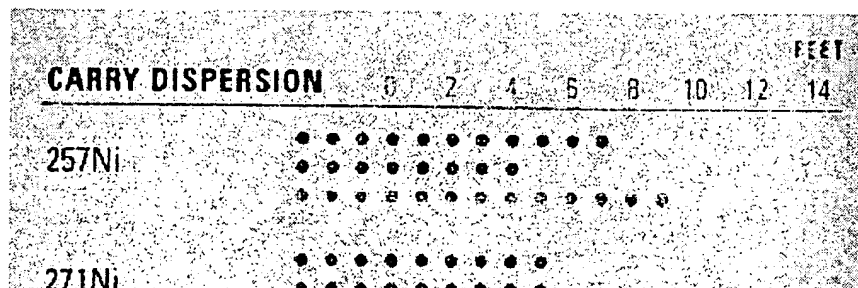
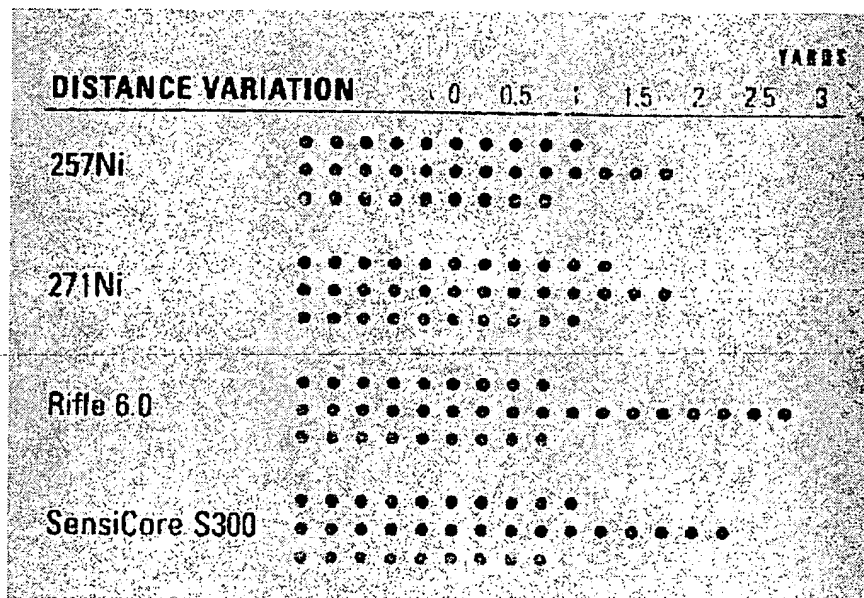
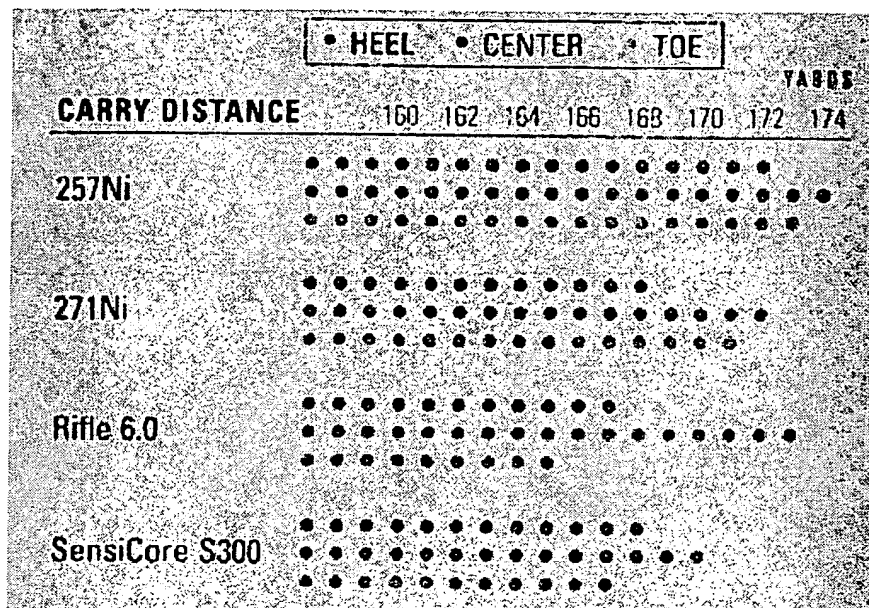
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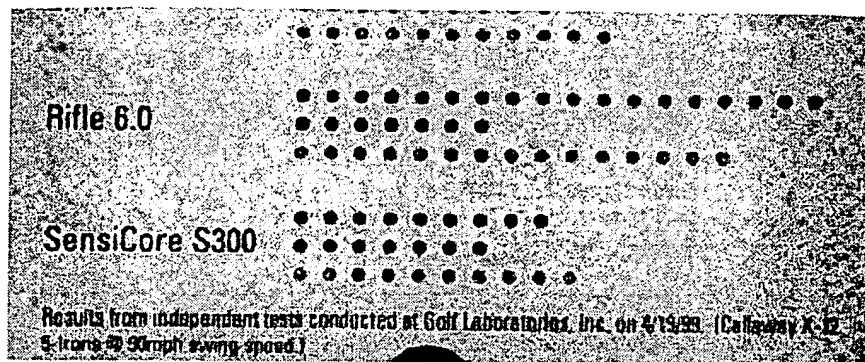
CLUBS

REPAIR

THE
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In addition to the Diamets superior test results it is now gaining increased popularity on the professional golf tours including; Tear Drop, Hooter's, Nike, PGA, and Senior PGA.

CNNSI GOLF

CNNSI

COURSES

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TRACK YOUR GAME

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THE PERFECT SINGLE MALT SCOTCH...

THE Place • THE GLENLIVET

HOLE

5

Golfweek

PLAY THROUGH:

Choose a hole

Getting to the core of shafts

Technology and innovation help shaft designs keep pace with changing industry

By JAMES ACHENBACH

Senior Writer, Golfweek

(From March 20, 1999 issue)

Shafts are the least understood component of golf clubs. Even the U.S. Golf Association, the great arbiter of the rules by which we play, doesn't yet know enough to impose performance regulations on shafts (as it has on clubheads and balls).

In the faraway future, a golf shaft may be nonconforming if it exceeds, under prescribed conditions, a certain standard (distance, most likely). Until that day arrives, though, the golf industry continues its furious, frenzied, unfettered search for the perfect shaft. The shaft that lives next door in 1999 might go by the name Bubble, Fat, Hog, Logic, Lite, Muscle or Rifle.

PUTTER SHAFTS: BIGGER MAY BE BETTER

The biggest shaft in golf is clearly one of the best. Maybe the best, considering its use.

"The whole thing started," related Dave Billings, founder of putter and wedge manufacturer Dogleg Right, "when I was working on a bag design. My 3-year-old son (David) picked up a bag tube and said, 'What's this, Daddy?' Then he held it like a golf club and took a beautiful stroke."

A new putter was born. Billings went looking for the biggest available golf shaft. He found an

The USGA has few rules regarding shafts.

Virtually all materials, flex configurations and torque schemes are legal. It has been more than 30 years since Karsten Solheim tried to introduce a shaft with a bent butt section -- it was declared nonconforming because it wasn't straight -- but most developments are acceptable as long as the shaft exhibits "the same bending and twisting properties in any direction."

The shaft landscape for the new season is a mixture of trusted standbys, revitalized variations of old favorites, and dazzling new entries. The biggest trend? It is undoubtedly graphite iron shafts (witness Greg Norman's recent return to graphite in his irons). There is good reason for this trend -- manufacturers finally are mastering the art of fine-tuning shafts to individual clubs.

aluminum tube that was 1.104 inches in diameter.

"Lo and behold, it opened up my eyes as to the stability of the putter," said Billings, who four years ago introduced his first design. It had a 1-inch butt diameter and five-eighths inch tip diameter and was called the Hog.

Soon he added variations, so that various Dogleg Right putters can be purchased with butt diameters of seven-eighths, three-fourths and five-eighths inches (all have the five-eighths-inch tip diameter). This produces a choice in grip size.

Shafts are made of graphite, aluminum alloy and steel, creating another crucial choice - feel.

Helpful hint: These attention-grabbing putters generally require some getting used to. They have very little torque and present a redesigned notion of stability.

Dogleg Right has made a big impact on the Senior PGA Tour, where several leading players have used the putter. Suggested retail prices vary from \$99 to \$249.

distinctive internal diameter.

This is one modern answer to the manipulations that are inherent in the weighting game -- sticking lead tape on the back of a clubhead or stuffing some form of weight down the hosel.

Penley also has a new composite putter shaft, called the MON-Y, which attempts to solve another problem -- putters with a swingweight that is too light. The shaft, with the same taper and diameter as a standard steel putter shaft, can drastically increase swingweight on shorter putters or those with a lightweight head (it is a well-known fact that most of the top players in the world prefer a putter with a swingweight of D3 or higher).

For several years, Fenwick has engaged in enthusiastic pursuit of the perfect shaft. In January 1998, the shaft manufacturer unveiled ModeSync 3-D, a method of modal analysis using 3-D computer images. The idea here is to synchronize each shaft with its clubhead.

Now, Fenwick has licensed Frequency Matching from Royal Precision. Frequency

Another highlight for 1999: lightweight steel (witness Callaway's inclusion of new steel designs for both its Hawk Eye woods and Pro Series X-12 irons, plus True Temper's introduction of Dynamic Gold Lite and Royal Precision's Rifle Lite).

"I think graphite shafts for irons have come farther in the last 18 months than any other development in the golf industry," said John (Chip) Bridges, executive vice president of shaft manufacturer Penley Sports. "I don't think there's any technology in steel that can compete with graphite technology."

Bridges will receive plenty of disagreement on that point, especially from steel kingpins True Temper and Royal Precision, but there is no disputing the introduction of new graphite iron shafts by many manufacturers.

The prevailing philosophy, pioneered by companies such as Graman, Fenwick and Penley, is to marry graphite shafts to individual irons. Penley, with its IMS (Individually Matched Shaft) iron shaft, can hold an exact swingweight throughout a set by moving a proprietary weighting material up and down the shaft. The material, four times heavier than graphite, can be placed in variable locations during the wrapping process. Each individual shaft ends up with a

Matching, pioneered by Brunswick (later FM Precision and now Royal Precision), refers to a method of measuring and defining the flex of a golf shaft. The Frequency Matching patent for steel shafts recently expired, but Royal Precision still holds a similar patent for graphite shafts.

Dave Podrug, vice president of sales for Graman USA, is one of the most straightforward individuals in the golf industry. Thus he can say, with conviction, "If graphite is to be the future of golf, which is yet to be determined, the shafts have to be consistent. That is why our trademark is shafts that are plus or minus two CPM (cycles per minute).

"Lots of people felt that filament wound shafts had so much promise, but we don't make them, because there are other things that happen, additional variables (primarily resin), that do not allow us to achieve plus or minus two CPM."

That's another controversial statement, because some manufacturers and clubmakers swear by filament wound graphite (filament winding is controlled by a computer, with thin strands of graphite material being wound in a complex pattern around a mandrel).

Rapport is one company that has committed itself on a major scale to filament winding and the traditional sheet-wrapped method, in which sheets of graphite fibers are manually maneuvered around a mandrel.

Rapport has a new filament wound shaft called DiaMet, made by impregnating various metals (nickel, for example, in the Tour Nickel Series for irons and fairway woods) in the graphite fibers to increase the weight. Obviously, the company is betting that many golfers will return to heavier graphite in irons and fairway woods.

"Still," said Howard Miller, Rapport's director of marketing and tour relations, "the beauty of this shaft is that we can easily provide different weight ranges for different tastes (depending on type and amount of metal). We can produce very tight tolerances with DiaMet."

Aldila, golf's oldest manufacturer of graphite shafts, is selling Tour Grade Series shafts for irons, and Mike Rossi, vice president of sales and marketing, calls the Tour Grade "the finest shaft we've ever made, and the feedback we're getting backs that up."

Furthermore, Rossi said, "The myths about graphite are just that. Graphite iron shafts perform just as well as steel."

The Tour Grade shaft for irons is a constant-weight shaft and is available in two versions -- 100 grams and 120 grams. In woods, there is a choice of 60, 70, 80 and 90 grams.

"This allows a player to pick and choose. Ultra-light driver shafts are very popular, but one of the trends we see is heavier shafts for fairway woods," explains Rossi, echoing the same sentiment as Rapport's Miller.

One of the trends that True Temper sees is the continued loyalty to the name Dynamic Gold. The perennial Darrell Survey winner in iron shafts on the PGA Tour, now has the Dynamic Gold Lite.

Dynamic Gold Lite addresses a phenomenon of contemporary golf clubs -- longer irons. Because it is some 18 to 19 grams lighter than Dynamic Gold, the new shaft allows clubmakers to produce longer irons without a sledge-hammer swingweight.

With True Temper's acquisition of Grafalloy, the second oldest graphite shaft manufacturer, there is a wealth of graphite technology in the True Temper/Grafalloy camp.

"Our goal is to provide one-stop shopping," explained True Temper president Scott Hennessy. "You have a type of shaft that you like, no matter what the weight or the material is, you should be able to get it from True Temper."

"We really believe the shaft is the engine of the club," said Neal Haas, Grafalloy's director of composite operations. The newest engine from Grafalloy: the ProLogic iron shaft, a constant-weight shaft that is designed for high performance in the same vein as ProLite and SoLite, which are used by many low-handicap players in wood shafts.

Grafalloy and other large manufacturers make many proprietary shafts for golf club companies, one of the best examples being the LTLF (Low Torque Low Frequency) shaft that Grafalloy supplies to McHenry Metals. Some golfers have waggled a McHenry Metals wood and thought the shaft was too whippy, but that's actually the basis of this concept -- McHenry wanted to tighten the torque, thus increasing accuracy, while providing increased feel with a softer frequency.

The most famous of the proprietary shafts are Taylor Made's Bubble Shaft, Wilson's Fat Shaft and Ben Hogan's Apex. The Bubble, now in its third generation, is used by tour players and average players alike in woods and irons. The Fat Shaft, known primarily as an iron shaft (there are Fat Shaft woods), has grown from one model of irons (Oversize Cast) to three (including the RM Tour and new Tour Cast).

Royal Precision, maker of the Apex, has dramatically increased its presence in the steel shaft market. It used to be known primarily for the Rifle, but now there is also Rifle Lite (10-12 grams lighter than Rifle) and Tour Flighted Rifle.

Tour Flighted Rifle, used by Lee Janzen in his irons when he won last summer's U.S. Open, is designed to get long irons airborne but keep the trajectory down on short irons. To achieve this, Royal Precision engineers have greatly manipulated the bend point.

Royal Precision had five standard offerings last year, but now has 60. "We think there is a buzz about our product," said vice president of sales Tony Montgomery.

One of the most startling new developments is that Harrison Sports is about to introduce steel iron shafts. Harrison, with a hard-earned reputation as a popular manufacturer of graphite shafts widely used by long-drive contestants, will make three different steel shafts -- Premier Gold, Steel Lite and Harrison Professional. Raw length on all will be 43 inches to allow for customization.

Another big change: AJ Tech is about to introduce graphite shafts that will compete

pricewise with Grafalloy and Harrison. AJ Tech, known for its bright red shafts, has been a manufacturer of high-priced, premium shafts throughout the 1990s. Now it will add two low balance point, low torque shafts, the X335 and X350, to compete head-to-head with its rivals.

According to Al Jackson, founder and president of AJ Tech, these shafts have passed a 3,000-hit, extreme high-heel, 140 mph destruction test with a Callaway Hawk Eye driver.

UST has a concept that should appeal to skilled players. "Our objective is to make shafts that work with the heads that are popular today," said Larry Bodle, UST president and CEO.

Toward that end, UST is selling the Proforce 65 and 75, shafts with tip stiffness and torque that is matched to the weight. The result: a tip-stiff shaft that allows golfers to use more lofted drivers and keep the trajectory down.

"Driver lofts have become absurdly low," Bodle said. "Most players, even good ones, can't hit them consistently because the loft is so low. This shaft allows golfers to use a higher loft but still get a penetrating trajectory."

With so much shaft activity, some quality shaftmakers are largely unknown to the golfing public. Innovative Sports Technologies is a good example. SpyroTech Corp., one of seven shaft manufacturers included in the Ping Wrx custom program, managed to pass Ping's destruction test faster than any graphite shaftmaker had ever done.

Companies, too, are designing their own shafts and then finding manufacturers to produce them. Callaway's Dick Helmstetter is famous as the father of more golf shafts than anyone can count. On the other hand, Terry Koehler, president of Reid Lockhart, is largely unknown but has done some remarkable shaft design with Ben Crenshaw. Working together, the two have sparked proprietary shaft patterns for wedges and putters.

"The only complaint we ever heard on wedges was lack of feel around the greens," Koehler said. "A wedge is a funny tool -- it has to perform at all these different swing speeds. A softer flex is going to give you more head feel at slower speeds, but when you get to hitting full shots you get these ballooners."

Koehler and Crenshaw ended up with a shaft, made by Royal Precision, that includes a lower frequency with an extremely high flex point.

"You know," concluded Graman's Podrug, "there are some wonderful new things happening in shafts, but we ought to pay tribute to the basic design of the tapered shaft. It's been around for a long time, and it's kind of a mystery why it works so well. It just does. It's kind of like 90 feet in baseball (the distance from home plate to first base). It's just about perfect."

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A used set of Ping irons.



HOLE

3

EQUIPMENT

PLAY THROUGH:

Choose a hole

Final Day: Monday, February 1 1999 PGA Merchandise Show

By SCOTT KRAMER
Senior Editor, GOLF Magazine

ORLANDO -- The 1999 PGA Merchandise Show may have ended today, but the products will be rolling out in golf shops around the country all year. The past three days, we've showed you many of the new products being introduced here at the show. Before we sign off, here are a few others.



You may see many a **PURESPIR** wedge infomercial on TV, but the company also has a new set of irons (unpriced as of the moment). Like the wedges, these steel irons boast a rough face insert made of diamond crystals. In fact, you can't clean it with an ordinary towel, but need a wire brush instead. There's also a matching titanium driver.

WRIGHT GOLF is a new club company based out of the Memphis area. Its first set of irons, the iP Closed Cavity, is available in Offset or Tour model. Both are very attractive and come standard with your choice of either True Temper steel shafts or proprietary graphite shafts. Although they appear to look like blades, they really have cavities inside to create what the company bills as internal perimeter weighting (thus, the "iP" in the name).

RAPPORT COMPOSITES is showcasing its DiaMet shafts for irons that feature diamond-woven metallic fibers for a high consistency rate. It not only results in a unique look on the outside, but an unlimited combination of torque, flexibility, weight and balance on the inside.

Best known for its pricey, high-quality golf bags, **BELDING** has embraced the practical bag market with a lightweight, carry bag with stand. But this is no ordinary carry bag. It features a double-shoulder,



backpack-like strap, and has a lined water bottle pocket and a bag-wide sweater compartment. In three sizes: sport (\$99), pro (\$119), and deluxe (\$139).



There were some other clubs of note: **MIZUNO** has added to its T-ZOID club line the COMP EZ forged irons, Sure stainless cast irons, and Pro Forged driver; **TEARDROP** expanded its putter line; and **TAYLOR MADE** emerged with a Rescue utility wood.

Balls were the big story at this show (refer to our [first day report from Friday](#)). As for clubs, the bottom line is that you'll see plenty with multiple metals show up in your favorite golf shop in 1999. And that means there is a slew of new products for you to try out on driving ranges and at demo days. Stay tuned to GOLFOonline throughout the year to catch any more equipment introductions, when they happen.

- [Sunday's coverage](#)
- [Saturday's coverage](#)
- [Friday's coverage](#)
- [Preview story](#)
- [Golfweek coverage of the PGA Merchandise Show](#)


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June 12, 2001

Weight Port Screws and New Fitting Options For PC3 Irons

Hello from Dynacraft. This week's message involves a reminder to always epoxy weight port screws in place when building club, whether you add weight to the port or not. The screws are not epoxied at the foundry and may work their way into the ports is not epoxied in place, thus creating a rattle. We do offer a set screw remover tool, but epoxying the screws in place save the need for his tool.

We now offer a unique custom fitting option for you. The highly successful PC3 irons are now available in not only standard lies, but in 3 degrees upright and 3 degrees flat as well. This means that effectively, you can offer a set of PC3's that will be up to 5 degrees flat or upright to your customer. This is a definite plus for those players requiring such lie angles. The PC3's are color coded by the hosel lettering to indicate lies: black letters are standard lie (61 degrees on the #5), gold is 3 degrees flat (58 degrees) and white is 64 degrees, or 3 degrees upright.

Thanks for your consideration

Regards,
Jeff Jackson, Dynacraft Golf

Note: The author has been playing a set of the PC3 irons with Rapport Diamet shafts (N271's) and highly recommends both the heads and shafts.

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Closing the Gap

It's hard to go wrong with modern graphite or steel shafts

By Mike Bailey, PGA Magazine

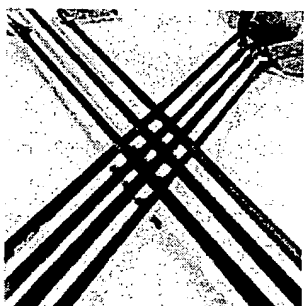
Evolving from the fishing industry early graphite golf shafts were little more than whippy high-torque novelties in the early 1970s. It wasn't until the '80s, with the introduction of metal woods by Taylor Made that graphite really found its place in golf.

Since then, graphite technology has expanded exponentially. Whether it's a sheet-wrapped product or a filament winding, the consistency, cost and performance of graphite shafts have improved dramatically over the years.

At the same time, the death of steel shafts has been greatly exaggerated. Manufacturers such as True Temper and Royal Precision haven't exactly been idle in the past decade.

"You've got to give a lot of credit to the companies that manufacture steel shafts," says Mike Perryman, president and chief executive officer of Rapport Composites which has been producing graphite shafts exclusively in the United States since 1992. "They've come up with a number of innovations such as lighter steel. Rifle Shafts and vibration-dampening filters. Graphite designers have moved toward steel, and steel has moved toward graphite."

Steel has long held the advantage of being more predictable in performance because it's molded from hot metal instead of constructed in layers as graphite is. Combine it with frequency-matching technology, and steel gives players exceptional consistency, especially for irons, where distance control is a must.



Graphite is a strong lightweight material that has enabled manufacturers to design clubs that hit the ball farther. It's been used widely in drivers, where distance doesn't need to be controlled and in fairway woods.

The strength of graphite is its shock absorption effect, which is why some players, especially seniors, have switched to graphite in their irons. But for most stronger players, graphite has been too unpredictable, both in distance and direction for irons.

Rapport has introduced its DiaMet shafts for irons. Filament wound in diamond patterns the carbon fibers are coated with metals such as nickel to bring the weight into the 100- to 120-gram range, close to that of a lightweight steel shaft. The extra weight gives it the feel of traditional steel shafts, but still retains the dampening and energy qualities associated with graphite. Grafalloy, a division of True Temper, utilizes Logic Technology, which creates consistency throughout a set of irons.

"Our goal is really to make a transitional shaft for the better player as the population ages," says Rapport's Perryman. "What we are doing is making the filter an integral part of the shafts."

In steel, the vibration filter comes from inserts. True Temper's Sensicore insert is a 14-inch composition polymer that fits inside the shaft. The stinging normally felt with a toe or heel hit with a traditional steel shaft is virtually eliminated by the insert according to Scott Henessy, president and chief executive officer for True Temper. Plus, the 115-gram shaft, even with a 5-gram insert, is still 10 grams lighter than a traditional steel shaft and only slightly heavier than many graphite shafts now available for irons.

"I think you're finding a natural balance between graphite and steel," says Henessy, "at least until the next generation

of new material comes along."

Jimroy Terry, general manager at the TPC at Tampa Bay in Lutz, Fla., has seen both steel and graphite improve over the past decade, which he says makes it even more imperative that he stay current with the technology.

"There are so many different shafts out there that it's confusing to the consumer," says Terry. "It flails squarely on the shoulder of the PGA Professional who does a fitting to clean up the confusion in players' minds."

RAPPORT WINS War of the Fairway Woods at Senior PGA.*

61 shafts in play proves serious seniors are Swinging Science!

It's true. When the second major of the year rolled around, the Darrell survey pointed out that more competitors had a Rapport shaft in their fairway woods than any other.

RAPPORT TOUR Ni-271

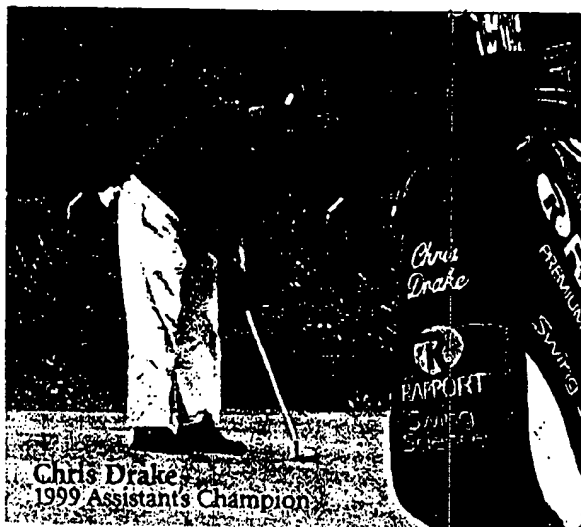
Wait until they stick the new DIAMET™ Tour Ni in their irons. It's a whole new game!

DIA MET™
DIAMOND WOVEN METALLIC FIBERS



PGA Update

This year's Indiana Open (Co-Sponsored by Rapport Composites) was made into a grueling day of golf as competitors were forced to contend with high winds and 36 holes of golf on the final day. Eventual winner Soon Ko made a terrific up and down from the front bunker at the difficult finishing hole at the Brickyard



Crossing. Congratulations from Rapport to all the contestants making the cut.

RAPPORT TOUR Ni-271 WITH DIAMET TECHNOLOGY

With over half million dollars won on tour . . .
DIAMET scores big. Congratulations Gentleman.

Player	Tour
Buddy Allin	Senior PGA
Steve Ford	Nike
Harold Henning	Senior PGA
Spike McRoy	PGA/Nike
Buzz Thomas	Senior PGA
Barney Thompson	Senior PGA
Tyler Williamson	Nike/Hooters/TearDrop

Test Data

RAPPORT TOUR Ni-25

Rapport's DIAMET earns high marks against the industry's most popular steel shafts.

Listed on the right is some revealing data regarding Heel, Center, and Toe hits, using 5 irons from a leading OEM.

While graphite has always been known for its advantages over steel with respect to distance and shock absorption, graphite has never been known for consistency or its ability to hold down dispersion.

DIAMET proves otherwise. The graphs clearly point out that not only is DIAMET as good or better than steel regarding consistency, but it more than holds its own in the areas of shot dispersion and distance control.

In addition to mechanical testing, Rapport also has DIAMET in play on the professional golf tours. Tour Drop, Hooters, Nike, PGA and Senior PGA.

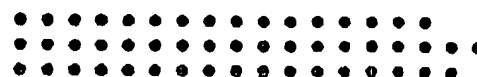
• HEEL • CENTER • TOE

CARRY DISTANCE

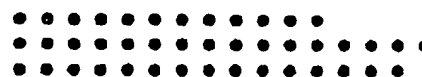
160 162 164 166 168 170 172 174

YARDS

257Ni



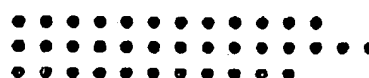
271Ni



Rifle 6.0



SensiCore S300

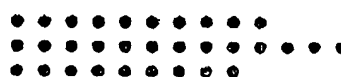


DISTANCE VARIATION

0 0.5 1 1.5 2 2.5 3

YARDS

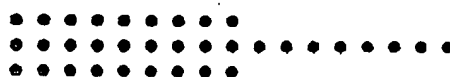
257Ni



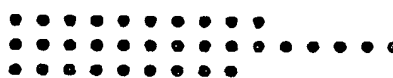
271Ni



Rifle 6.0



SensiCore S300

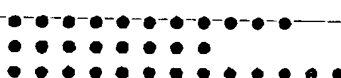


CARRY DISPERSION

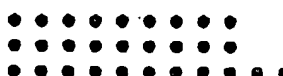
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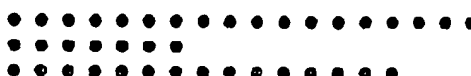
257Ni



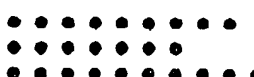
271Ni



Rifle 6.0



SensiCore S300



Results from independent tests conducted at Golf Laboratories, Inc. on 4/13/99. (Callaway X-12 5-Irons @ 90mph swing speed.)

SensiCore is a registered trademark of TrueTemp.
Rifle 6.0 is a registered trademark of Royal Precision.



1248-38:CJM:179691

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Perryman et al.

Serial No. 09/994,553

Filed November 27, 2001

GOLF CLUB SHAFT WITH
CONTROLLABLE FEEL AND BALANCE
USING COMBINATION OF
FIBER-REINFORCED PLASTICS AND
METAL-COATED FIBER-REINFORCED
PLASTICS

Attorney Docket No. 1248-38

Before the Examiner

Sneh Varma

Group Art Unit 3711

August 14, 2002

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DECLARATION OF MICHAEL W. PERRYMAN
DATED AUGUST 12, 2002

Sir:

I, Michael W. Perryman, hereby state as follows:

1. I am a founder, owner and the President of Rapport Composites USA, Inc., the assignee of the above patent application. I am an inventor of the invention claimed in the above patent application.

2. I possess over ten years of technical experience in the field of manufacturing, distribution and sales of composite golf club shafts.

3. This declaration supplements my Affidavit of June 12, 2001.

4. Rapport Composites manufactures and sells golf club shafts under the trademarks NICK and DIAMET which are manufactured by processes embodying commercial embodiments of the present invention.

5. A company named Swing Science LLC is Rapport Composites' exclusive North American licensee for NICK and DIAMET golf club shafts.

6. A company named Golfworks sells shafts under their trademark C.E.R., these shafts are manufactured by Rapport as an Original Equipment Manufacturer and embody a commercial embodiment made using the process of the present invention.

7. Specifically, the C.E.R., NICK and DIAMET shafts are composite golf club shafts formed by filament winding or sheet-rolling a plurality of fiber reinforced graphite plies around a mandrel to form a shaft core. At least one outer ply having metal-coated fibers is wound around all or a portion of the shaft core, wherein the metal-coated fibers are coated with nickel. A scrim layer is placed around the at least one outer ply.

8. In certain models of the C.E.R., NICK and DIAMET shafts, at least one ply with metal-coated fibers is wound to uniformly add a predetermined amount of weight to the shaft. In other models of the C.E.R., NICK and DIAMET shafts, at least one metal-coated ply in the outer layer is uniformly wound over a portion of the shaft for a distance of one third or less of the shaft's length in order to concentrate a predetermined amount of weight in a predetermined location on the shaft such as the hosel or grip.

9. Rapport Composites' shafts have become known and recognized in the industry for Rapport's proprietary nickel technology. Copies of promotional literature for the DIAMET, NICK and C.E.R. shafts are enclosed herewith. This literature features and promotes the nickel coated fibers and process used in manufacturing these shafts.

10. The DIAMET, C.E.R. and NICK shafts have solved a long felt need where no other shaft technology allows the total weight of the shaft to be varied almost completely independently of other shaft characteristics. This process allows Rapport to make a much wider range of shafts to fit virtually any golfer. In addition to controlling the weight of the shaft, the

percentage of nickel used can greatly effect the "feel" of the shaft making it highly desirable for a particular golfer.

11. I have been told by at least two experts in the industry that other companies have attempted to manufacture shafts with these materials in the past, but have been unable to make marketable products.

12. Swing Science began selling Rapport ~~NICK shafts~~, a successor to the DIAMET model, manufactured using the claimed process in early 2002. To date, Swing Science has sold shafts worth more than \$70,000 in sales. This represents a new product growth to over seven percent (7%) of Swing Science's sales within the first eight months of the shaft's introduction. Sales for these shafts continue to grow. This growth rate has continued in contrast to a flat to negative growth rate for the overall golf shaft market.

13. A company named Golfworks began selling Rapport shafts manufactured using the claimed process in early 2002. Golfworks featured these shafts, specifically emphasizing Rapport's proprietary Nickel Tip Technology, with the marks C.E.R. and NICK in Golfworks' 2002 catalog. During the first six months of 2002, Golfworks sold over 8,600 of these shafts for a sales value greater than \$90,000. This was Golfworks' most successful shaft introduction in 2002. Golfworks has selected Rapport's design and Rapport's manufacturing process to develop additional shafts for 2003. The market success of Rapport's design is directly due to the purchasers' desire for the advantages gained through the metal-coated fiber filament winding technology claimed in the present application.

14. The DIAMET shaft has received significant industry recognition and commercial success. In addition to previously submitted publications, submitted herewith is a recent article from Golf Illustrated, entitled "Graphite & Steel Shafts: Hottest Technology in New Club

Designs." This article features the new technology in Rapport's DIAMET shafts and explains the advantages of Rapport's filament wound metallic fibers. Also enclosed is an advertisement featuring Spike McRoy's tour success with a DIAMET shaft, pointing out the industry success of this product.

15. I have studied the patents cited in the Office Action dated February 14, 2002, including McIntosh - U.S. Patent No. 5,601,892; Branen - U.S. Patent No. 4,135,035; Ebneith - U.S. Patent No. 4,481,249; Hoffmeyer - U.S. Patent No. 5,735,753 and Chen - U.S. Patent No. 6,231,457. Based on my knowledge and experience in the field of composite golf shafts, in my opinion, at the time the present application was filed a person of ordinary skill in the art would not have been motivated to combine the teachings of these patents as suggested by the Examiner to arrive at the claimed invention.

16. For example, the Branen patent teaches away from the claimed invention with, "The goal generally, is to provide the stiffest, lightest shaft possible." In contradiction, the present invention suggests *adding* a predetermined amount of weight to a shaft and is designed to provide a *softer* shaft. By controlling the winding and weight, the present invention allows the manufacturer to control the feel and balance as independent variables by adjusting stiffness and/or weight to tune a golf club shaft. A person of ordinary skill would see no teaching or suggestion to combine these references.

17. With respect to the Ebneith patent, it is my opinion that a person of ordinary skill in the golf shaft manufacturing art would not consider using the materials suggested in Ebneith without some additional suggestion or teaching. Ebneith is concerned with the adherence of fibers in a matrix and with interlaminar strength, but does not teach or suggest use of this

material in manufacturing golf shafts. Moreover, Ebnetz suggests forming fibers into sheets, and does not suggest the filament winding as used in the present invention.

18. The Hoffmeyer patent suggests concentrating weight at a protruding "bulge section." For example, Hoffmeyer suggests that, "bulge section 4 can be formed by wrapping one or more trapezoidal and/or triangular pennant-shaped patterns around the mandrel in the desired location of bulge section 4." (Col. 3, lines 53-56). In reviewing the Hoffmeyer patent, it only teaches sheet wrapping, Hoffmeyer does not teach or suggest a smooth or uniform area of concentrated weight without a bulge, nor does Hoffmeyer teach or suggest use of metal-coated filaments as used in the claimed invention. In my opinion, a person of ordinary skill in this industry would not consider combining Hoffmeyer with the other cited references when desiring to add weight to a shaft without undesirable bulge sections.

19. In a further distinction, the Chen patent discusses the desirability of building up three tapered nodes. This contradicts the present invention where uniform winding or wrapping is used to form smooth sections without nodes. In my opinion, a person of ordinary skill in this industry would not consider combining Chen with the other cited references when desiring to add weight to a shaft without noticeable build-ups or nodes.

20. In summary, and speaking from my experience in this area, I would not have been motivated to combine the teachings of the McIntyre, Brannen, Ebnetz, Hoffmeyer and Chen patents in order to arrive at the claimed invention at the time of the application.

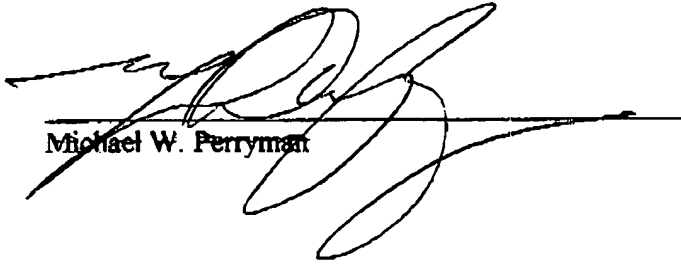
21. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of

Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon. —

DATE

8/14/02

Michael W. Perryman



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